Original research article

OBSERVATIONAL STUDY OF DEMOGRAPHIC AND MANAGEMENT PROTOCOLS OF INTESTINAL OBSTRUCTION IN TERTIARY CARE CENTRES OF URBAN POPULATION

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ABSTRACT

INTRODUCTION:

Intestinal obstruction is frequently encountered in differential diagnosis of patients presenting with a acute abdomen. Even with an early diagnosis bowel obstruction still

represent some of the most difficult problems that surgeons face with regard to optimal timing of therapy and appropriate management in different type of bowel obstruction.

AIMS AND OBJECTIVES:

To study the various modes of presentation, importance of early diagnosis and management of patients , the incidence of different complications during treatment and their management in tertiary care centre of urban population.

MATERIALS AND METHODS:

This study was conducted for a period of 2 years with patients admitted from 01/ 07/ 2017 up to 30/06/ 2019 with a sample size of 50 patients in L.G. hospital, Ahmedabad .Present study was prospective, observational, cross-sectional study.

OBSERVATIONS AND DISCUSSION:

Out of 50 patients, 70% were males and 30% were females, more commonly in young patients (11-20 yrs age). Most common presenting cause of intestinal obstruction is subacute intestinal obstruction which is 20 % and these cases were managed conservatively. Conservative approach was helpful in 38% of cases due to their early presentation and subacute type of obstruction most commonly. Primarily operative approach after initial resuscitation were 32% of total cases with indications like acute presentation with tenderness, abnormal peristalsis like absent or hyperperistalsis, fever, irreducible or palpable lump, ultrasonography finding of peritonitis etc. Most common complication encountered was wound infection 35% of operated cases. Mortality was 4 % occurrence in present study.

CONCLUSION: Of the 50 cases of intestinal obstruction in our study adhesions and bands are the common cause to produce intestinal obstruction. Koch's abdomen is also increasingly encountered in etiology of intestinal obstruction as stricture and it is related to poor socioeconomic status of study population in present study. Hernia related obstruction were higher in early twentieth century but decreasing nowadays. It suggests that planned hernia repair can avoid this complication. With better understanding of etiology due to advanced diagnostic ailments mortality rate is decreasing.

Key Words: Intestinal Obstruction, Management, Koch's abdomen, mortality, stricture, Complications, infection

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INTRODUCTION

Intestinal obstruction is frequently encountered in differential diagnosis of patients presenting with a acute abdomen. It is one of the commonest surgical emergencies accounting for nearly 30% of all acute abdominal emergencies. (1)

Even with an early diagnosis bowel obstruction still represent some of the most difficult problems that surgeons face with regard to optimal timing of therapy and appropriate management in different type of bowel obstruction.

With all present knowledge available regarding intestinal obstruction, a small attempt has been made to understand varied etiology, clinical presentation and difficulties presented in its management in urban areas of developing country.

AIMS AND OBJECTIVES

- To study the various modes of presentation, importance of early diagnosis, and management of patients of intestinal obstruction in tertiary care centre
- To study the role of conservative approach in selected patient and factors affecting their conversion into operative intervention.
- To study the incidence of different complications during treatment and their management.

MATERIALS AND METHODS

- This study was conducted for a period of 2 years with patients admitted from 1/7/ 2017 upto 30/06/ 2019 with a sample size of 50 patients in L.G. hospital, Ahmedabad .
- The sampling was done by stratified random protocol.
- The study population included all patients above 12 years admitted to surgical wards with a provisional diagnosis of intestinal obstruction.
- Necessary consent was taken from the patient and relative.
- Present study was prospective, observational, cross-sectional study.

• **Particulars of the patient**

• **History**

• **Clinical examination**

a) **General examination**: - by noting points on the proforma

b) **Systemic examination**: - emphasis on abdominal examination. In abdominal examination, special relevance was given to palpatory finding of guarding. A provisional diagnosis of intestinal obstruction was made.

• **Hematological investigations** All were subjected to a series of blood investigations

• **Radiological investigations**

a) **Roentograms**: chest X-ray PA view and X-ray abdomen erect were done. X-ray showing multiple air fluid levels on abdomen erect film was highly suggestive of intestinal obstruction.

b) **USG abdomen and pelvis**: This was done to point out any specific etiology, amount of fluid collection, peristalsis and dilatation of bowel loops.

c) **CT Scan** abdomen and pelvis with double contrast: This investigation was carried out in cases of diagnostic dilemma or when further details of a pathological condition were required.

Immediately after admission, resuscitation with intravenous fluids, especially ringer lactate and normal saline was started till hydration and urine output became normal. Nasogastric decompression with Ryles tube was carried out and antibiotic prophylaxis started.

Close observation of all bedside parameters (like pulse rate, BP, RR, urine output, abdominal girth, bowel sounds, tenderness and guarding) was done.

Patients who showed reduction in abdominal distension, improvement in general condition and bowel movements especially in individuals with adhesions, conservative management was confined to them.

Patients with clear-cut signs and symptoms of severe acute obstruction were managed by appropriate surgical procedure after resuscitation.

Histopathological examination of the specimen of resection / biopsy was done whenever necessary.

The postoperative period was monitored carefully.

Any complications if any, were noted and treated accordingly. Postoperative follow up was done in majority of the patients up to 3 months.

OBSERVATION

1) Age and sex distribution:

Graph 1 Age and sex distribution in our present study

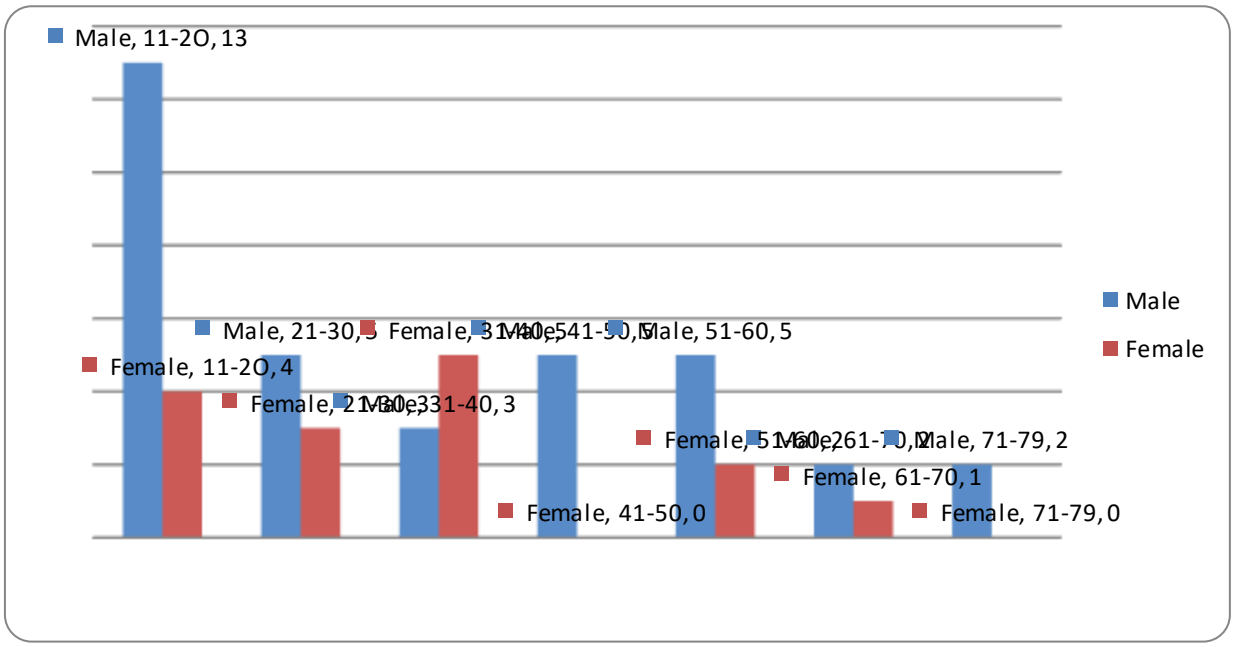

Table 1: Comparison of sex incidence in different studies

Studies	Male : Female ratio
Budharaja et al [2]	4:1
Harban Singh et al [3]	4:1
Sharkeed [4]	1:1
Saravanan et al. [5]	4:1
Present study	2.33:1

Table 2: Comparison of age distribution

Age in years	Present study	Cole GJ[6]	Souvik Adhikari[7]	Harban Singh [3]

11-20	34%	10%	9%	10%
21-30	16%	10%	11%	16%
31-40	16%	18%	15%	18%
41-50	10%	16%	24%	15%
51-60	14%	15%	13%	10%
61-70	6%	16%	20%	20%
71-79	4%	9%	8%	5%
80-89	0%	6%	4%	4%

2) **Etiological distribution:**

Graph2: Etiological distribution of cases

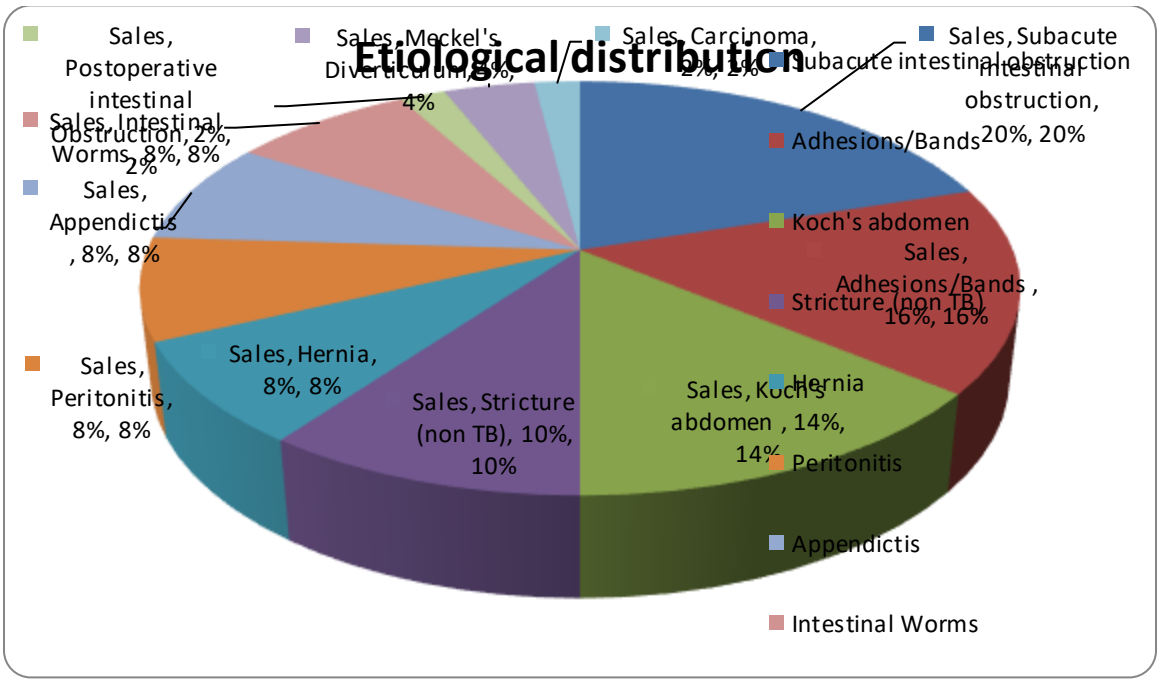

Table 3: Comparison of etiology of intestinal obstruction in different studies

Cause	G.J. Cole[6] 1965	Saravran P.S. et al[5] 2016	Souvik Adhikari[7] 2010	Present study
Adhesions	15%	22%	15.53%	16%
Hernia	27%	26%	35.96%	8%
Koch's etiology	3.5%	6%	14.17%	14%
Carcinoma	3.4%	10%	16.62%	2%
Intussusception	12%	8%	2.18%	0

3) **Clinical presentation and findings:**

Table 4: Clinical presentation of cases:

Symptoms and signs	No of cases	Percentage
Abdominal pain	50	100%
Vomiting	46	92%
Distension	26	52%
Constipation	36	72%
Tenderness	47	94%
Guarding	12	24%
Rigidity	1	2%
Absent peristalsis	4	8%
Airfluid levels	50	100%
Irreducible swelling	4	8%
Palpable lump	1	2%

Table 5: Comparison of clinical features with other studies:

Study group	Abdominal pain	Vomiting	Abdominal distension	Constipation
Present study	100%	92%	52%	72%
Souvik Adhikari[7]2010	72%	91%	93%	82%
Jahangir – Sarwar Khan [8]	100%	92%	97%	97%

4) Types of management

Table 6: Types of patient management in our present study

Types of management	Male	Female	Total
Conservative	13(26%)	6 (12%)	19 (38%)
Operative	13(26%)	3 (6%)	16(32%)
Conservative converted to operative	9(18%)	6(12%)	15(30%)
Total	35(70%)	15(30%)	50 (100%)

5) Operative procedures

Table 9: Operative procedures required in different cases.

Sr no	Etiology	Adhesiolysis / Band release	Resection (part or wedge) and anastomosis	Stoma	Hernia repair	Appendicectomy	Stricturoplasty	Milking of worms	Perforation closure
1	Adhesions /bands	6	-	-	-	4	-	-	-
2	Hernia	-	1	-	3	-	-	-	-
3	Peritonitis	-	-	-	-	-	-	-	2
4	Koch's abdomen	2	3	-	-	2	2	-	-
5	Appendicitis	-	2	-	-	2	-	-	-
6	Stricture	-	2	-	-	1	3	-	-
7	Carcinoma	-	-	1	-	-	-	-	-
9	Intestinal worms	-	-	-	-	-	-	1	-
11	Meckel's diverticulum	-	2	-	-	-	-	-	-
	Total	8	10	1	3	9	5	1	2

6)**Complications**

Table 10: Incidence of different complications in our present study

Sr no	Complications	No of cases	Percentage
1	Pulmonary	2	4%
2	Septicemia	1	2%
3	Paralytic ileus	2	4%
4	Death	2	4%
5	Wound infection	11	22%
Total		18	36%

Table 11: Cause of mortality

Case no	Age	Duration of Symptoms	Operative findings	Operative procedure	Cause of death
2	70 yrs	3 days	Band at terminal ileaum causing twisting of bowel loop + mild free fluid	Emergency exploratory laparotomy +band release + Peritoneal lavage	Death due to septicemia
34	65	20 days	malignant mass	Elective exploratory	Death due to

	yrs		causing narrowing at splenic flexure + proximal dilatation	laparotomy +descending and transverse colon resection + hartmans procedure + peritoneal lavage	cardio respiratory distress

Table 12: incidence of mortality in different studies

Study	Year	No of cases studied	Mortality
Wangensteen[9]	1955	252	11%
C. S. Ramachandran[10]	1982	417	12.7%
Sufian and Matsumoto[4]	1975	171	19%
Souvik Adhikari[7]	2010	367	7.35%
Present study	2017	50	4%

7)Hospital stay:

Table 13: Hospital stay in different patients related to etiology

Hospital stay (days)	Adhesion /bands	Hernia	Peritonitis	Koch' s abdomen	Appendicitis	Stricture	Carcinoma	Subacute bowel obstruction	Worms	Postoperative intestinal obstruction	Others (Meckel,s)	Total
0-5	-	1	1	1	-	-	-	8	2	-	-	13
6-10	5	-	1	-	2	-	-	2	1	-	-	11
11-15	2	2	1	6	1	2	-	-	1	1	2	18
16-20	1	-	1	-	1	2	-	-	-	-	-	5
21-25	-	-	-	-	-	-	-	-	-	-	-	0
26-30	-	1	-	-	-	1	1	-	-	-	-	3
Total	8	4	4	7	4	5	1	10	4	1	2	50

DISCUSSION

- In our present study 35 male patients were presented with intestinal obstruction which is 70 %. While 15 female patients 30 % incidence, where male to female ratio 2.33: 1.

- In present study most common age incidence was found in younger population though intestinal obstruction occurs in all age with varying incidence in my which is between 11- 20 year age group and found to be 34% of cases with 26% male and 8 % female cases .
- While the least common age group is adult population between 71-79 .
- It shows age distribution is nearly same as Harban singh study[3] and Cole GJ[6] studies for age group of 21-30 and 31-40.
- Most common presenting cause of intestinal obstruction is subacute intestinal obstruction which is 20 % and these cases were managed conservatively.
- While another most common defined cause of obstruction is Adhesions and bands which is encountered in 16% of cases.
- In management of cases where conservative approach was helpful in 38% of cases due to their early presentation and subacute type of obstruction most commonly.
- While patients who were primarily undergone for operative approach after initial resuscitation were 32% of total cases. Indications for primary operative approach were acute presentation with tenderness, abnormal peristalsis like absent or hyperperistalsis, fever, irreducible or palpable lump, ultrasonography finding of peritonitis etc.
- Patients which were primarily tried to be managed conservatively and then converted to operative approach were 30 % of total cases.
- In these patients indications for operative approach after conservative trial were persistence or exaggeration of signs and symptoms, increasing air fluid levels were considered and most common indication was persistence of symptoms along with tachycardia.
- In these patients most common etiology encountered was stricture in 33% 0f these 15 patients followed by intestinal tuberculosis.
- While Koch's abdomen also found with significant incidence of 14% in our study correlating with poor socioeconomic status of the population of study population.
- Incidence of intestinal worms is 8 % which is also commonly found in same population with poor food hygiene.
- Carcinoma was least common presenting cause of intestinal obstruction in our present study along with postoperative acute intestinal obstruction
- Incidence of adhesions is comparable with GJ cole[6] and Adhikari S. et al[7] study and also incidence of Koch's etiology is same as Adhikari S. et al[7] study.
- While intussusception is not encountered in our present study, while incidence of carcinoma is lowest among other studies.
- Most common symptom present in our study was abdominal pain which more common located in periumbilical region followed by generalized in abdomen and present in almost all patients, followed by second most common presented symptom of vomiting, constipation and then abdominal distension.

- Among clinical signs most common sign present was tenderness found in 94 % patients which was localized around periumbilical region. While abdominal rigidity was least common presentation in our study.
- Absent peristalsis was found in 8% cases which have undergone operation early in course of management and most common etiology present in them was adhesions and bands.
- Irreducible swelling in 8% which were present in cases of hernia while palpable lump in 2 %.due to right iliac fossa lump.
- Air fluid levels in all patients with varying deggres of insignificant to multiple air fluid levels making it rulling out criteria on xray findings on presentation . while on ultrasonography dilated bowel loops with varying degree of bowel diameter was presnt in almost all patients.
- Most common operative procedures performed was adhesiolysis in 8 patients as a main operative procedure while appendicectomy is performed in 9 patients but as a primary procedure in only 2 patients.
- Milking of intestinal worms which was least commonly performed procedure overall in management of intestinal obstruction of various etiology because of it specific indication for intestinal worms only.
- Most common complication encountered in our management was wound infection 35% of operated cases presenting from wound serous discharge to wound gap and managed in most patients with sterile dressing while few patients required vacuum assisted closure and secondary wound closure prolonging the hospital stay in most patients.
- While mortality was 2 patients (4 %) in present case study and related to increased age and advanced disease progress in them.
- With better understanding of etiology due to advanced diagnostic ailments mortality rate is decreasing.
- Hospital stay was mostly between 11 to 15 days where most commonly occupied by operated patients with exploratory laparotomy with major operative procedure.
- While patient were managed as short duration as of 4 days in subacute bowel obstruction while in patients with abdominal wound complication upto 30 days.

SUMMARY AND CONCLUSION

- Of the 50 cases of intestinal obstruction in our study adhesions and bands are the common cause to produce intestinal obstruction as abdominal and pelvic surgeries are increasingly performed among patients.
- Koch's abdomen is also increasingly encountered in etiology of intestinal obstruction as stricture and it is related to poor socioeconomic status of study population in present study.

- Hernia related obstruction were higher in early twentieth century. But due to early surgical treatment for hernia incidence of strangulated hernia is decreasing nowadays. It suggests that planned hernia repair can avoid this complication.
- Plain X-ray abdomen taken in erect posture is the single most important investigation required for the patients and air fluid levels is present in almost all cases of intestinal obstruction.
- Though clinical, radiological and laboratory findings put together can bring about the best and accurate diagnosis of intestinal obstruction
- Intravenous fluids and electrolytes, gastrointestinal aspiration, antibiotics and then appropriate surgery are still the main stay of the treatment.
- In majority of the patients intestinal obstruction require surgical intervention, but trial of conservative approach early in course of disease can be successful.
- Among the patients which were initially considered for conservative management and later required operative intervention, most common factors responsible were persistence of symptoms and signs with persistence of air fluid levels on erect abdominal x-ray.
- Among the factors influencing the mortality and morbidity are age, state of hydration, nutritional status, viability of the bowel, etiology of obstruction, site of obstruction, delay in diagnosis and surgical intervention and associated medical illness.

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Conflict of interest: NIL